

Materials Science Program

Graduate Student Handbook

Fall 2010



DOCTOR OF PHILOSOPHY MATERIALS SCIENCE PROGRAM
REQUIREMENTS

Part A: Curriculum (Approved – June 2002; Revised November 2009 to be effective for new students starting January 2010)

Requirements

- A minimum of 10 classroom courses consisting of at least 28 credits. Satisfactory progress must be demonstrated, consistent with Graduate School requirements for good standing (i.e., 3.0 GPA or better). The following additional requirements and restrictions apply to these 10 courses:
- At least one course (at least 3 credits) must be in mathematical analysis techniques or emphasizing its application (Choose from: CBE 660, NEEP/EP 547/548, Math 703 or 704, Physics 721. Others possible by petition.) The purpose of this math requirement is to ensure literacy in mathematical descriptions (typically calculus-based) of materials-relevant phenomena. Examples of where this mathematical literacy is important include transport, stress/strain, dynamic reactions, quantum properties, electron or x-ray microscopy, and electromagnetic properties. Examples of the types of mathematical language that are important to descriptions of materials phenomena include differential equations (ordinary and partial, the latter referring to multivariate models and solving boundary value problems, diffusion equations, wave equations etc.), transform theory (Fourier, Laplace), series solutions and approximations, and complex analysis.
 - At least five courses consisting of at least 14 credits must be at or above the 600 level. Students can petition for exceptions for other courses that must not be generally regarded as part of undergraduate curricula. (Examples of exceptions: NEEP 547 &

548, MSE 530, 570, & 445, CBE 540 & 544. Others possible by petition.)

- MS&E 900 may not be used to satisfy any aspect of this requirement.
 - The courses must span two or more Departments, meeting the objective of an interdisciplinary education in materials.
- Academic advisor's signature is required to remove the registration hold for each semester's registration.
- Two semesters of MS&E 900 (MSP seminar course). MS&E 900 must be taken in the first and second semester of enrollment if it does not conflict with other requirements.
- Within the first year, each student must select and declare to the MSP office three core courses that are fundamental to their research specialization. These courses must be approved by the student's MSP advisor. In the RRE exam, the student will be examined orally on these subjects in addition to questions on their research presentation.

Relevant Information

- A maximum of two courses or six credits can be satisfied by transfer procedures for graduate courses taken while enrolled as a graduate student at another academic institution.
- Consistent with Graduate School requirements, students must have an academic advisor who advises them in course selection. Typically, the research mentor(s) (or "major professor(s)") will also serve as the academic advisor(s). The academic advisor's signature approving the semester course plan must be on file in the MSP office in order to remove the registration hold for each semester's registration. The

MSP Director or his/her appointee will serve as academic advisor for new students who have not yet selected a research mentor.

- Academic advisor's signature is required to remove the registration hold for each semester's registration.
- A petition process will be available for special exceptions
- A standing committee will be appointed and maintained by the Program Director for the purpose of evaluating petitions.

Part B: Research Requirements (Approved, June 2002)

Requirements:

- Satisfactory performance in the Research Readiness Exam (RRE)
- Preparation and approval of the Ph.D. Thesis Proposal
- Completion of original research project at a level appropriate for the Ph.D. degree
- Completion of a Ph.D. thesis using the guidelines set forth by the UW graduate school
- Successful defense of the thesis to the student's Ph.D. Thesis Committee
- Public seminar on the thesis research

Research Report and Research Readiness Exam (RRE)

- A written report describing the student's research must be submitted to the student's MS/RRE Committee for evaluation. This report is to be written by the student in consultation with his/her thesis advisor(s) in a format that is acceptable to the advisor(s) and the MS/RRE committee. Possible formats include a formal Masters Thesis (if

being counted for MS degree requirements), a completed publication, and a completed progress report, among others.

- The student will make an oral presentation summarizing the research procedures, results, related literature, and significance of the research. The RRE Committee will evaluate the abilities of the student. Discussions will be directly about the research presented, and will probe the student's understanding of relevant related concepts. In particular, the student will be examined in the three core areas (declared by the student) as fundamental to this research. The Committee must determine whether the student is ready to pursue Ph.D. level research and the Ph.D. degree based on the written report, graduate course grades to date, and this Exam.
- The student is responsible for scheduling this presentation and evaluation, confirming that all RRE Committee members can attend, and reporting the date and Committee members' names in advance to the Materials Science Program Office. The date and time of the presentation will be announced to members of the Materials Science Program. It is intended that this examination normally take place before the end of the fourth regular semester of study (not including summer sessions).
- Committee members may decline to participate in a scheduled Research Readiness Exam if they have not received the final draft of the written report at least two weeks prior to the scheduled event or if the student's major professor(s) have not approved it.
- *RRE Committee constitution:* This Committee consists of at least five faculty members including their major professor(s). At least four of the members must be members of the Materials Science Advisory Committee (MSAC). Committee members must have appointments spanning at least two different academic departments. The student may wish to invite additional faculty with relevant expertise who are not members of the MSAC. The student must confirm that each

Committee member is willing to serve and report the makeup of the Committee to the Program office by the end of the third semester of study.

- The UW Graduate School requires passing a “prelim exam” as a requirement for a PhD. In the MSP, successful completion of the Research Readiness Exam and successful completion of a Thesis Proposal are equivalent to passing the Preliminary Exam required by the Graduate School. After passing these two MSP exams and completion of coursework, the MSP student reaches dissertator status. The student is responsible for obtaining the exam signature form, and may consult the Program Office for assistance.
- The Research Readiness Exam and Research Project Report may serve in lieu of the MS oral evaluation and MS Project Report, respectively, for students seeking an MS degree from the Materials Science Program. Committee members will decide whether the Report and Exam performance are sufficient for an M.S. degree pass, even if they have not demonstrated Ph.D.-level research readiness.

Ph.D. Thesis Committee

- Immediately after successfully passing the Research Readiness Exam, Ph.D. students should form their Ph.D. Thesis Committee, in consultation with their major professor(s). This Committee consists of at least five faculty members including their major professor(s). At least four of the members must be members of the Materials Science Advisory Committee (MSAC). Committee members must have appointments spanning at least two different academic departments. The make-up of the Ph.D. Thesis Committee must be on file in the Materials Science Program Office by the end of the first regular semester after successful completion of the Research Readiness Exam.

Thesis Proposal

- Students who have passed the Research Readiness Exam and assessment prepare a written thesis proposal and make an oral presentation of this proposal to all members of the Ph.D. Thesis Committee. The Ph.D. Thesis Proposal must be concise. A suggested model is similar to NSF grant proposal format (no more than 15 pages, including figures and equations, but not references or title page). In some cases, several iterations of the written thesis proposal may be required before all Thesis Committee members judge the Thesis Proposal to be satisfactory.
- The Thesis Committee must approve the Thesis Proposal and approval must be reported to the Program Office before the student can apply for Dissertator Status. Formal approval will require the signature of every member of the Thesis Committee. Students may apply for Dissertator status any time after this approval is reported to the Program Office and all coursework requirements are satisfied.

Ph.D. Thesis (completion of a Ph.D. thesis using the guidelines set forth by the UW graduate school)

- Under the guidance of (a) thesis and academic advisor(s), the student must complete original research and prepare a Ph.D. thesis. The guidelines set forth by the UW graduate school for the student-advisor relationship, the conduct of thesis research, and the preparation of the thesis must be followed.

Ph.D. Thesis Oral Defense

- Ph.D. candidates must defend the Ph.D. thesis orally to their Ph.D. Thesis Committee. All members of the Ph.D. Thesis Committee

should be present at the Thesis Defense. Committee members may decline to participate in a Ph.D. Thesis Defense if they have not received the final draft of the thesis at least two weeks before the scheduled defense or if it has not been approved by the student's major professor(s). The student is responsible for scheduling the Thesis Defense, informing the MSP Office, and obtaining all the appropriate signature forms.

Public Seminar

- Students must present the work accepted by the Ph.D. Thesis Committee in a public seminar prior to graduation. The date and time of the presentation will be announced to members of the Materials Science Program.

Timeline and critical deadlines for passing your degree milestones

	FORM REQUIRED	COMMITTEE COMPOSITION	WHAT NEEDS TO BE DONE AND WHEN?
STEP #1	Research Readiness Exam Report	3 MSP faculty members, including the major professor committee must span at least two different academic departments	*RRE needs to be completed by the end of the 4th regular semester of study (not including summer sessions); See Diana Rhoads **See Diana Rhoads for the RRE form& MS warrant a minimum of 3 weeks prior to the exam. ***Date & time of presentation needs to be given to Diana Rhoads a week prior to the RRE for announcement to the members of the MSP.
STEP #1	MS warrant	3 MSP faculty members, including the major professor committee must span at least two different academic departments	Please request an MS warrant a minimum of 3 weeks prior to your defense - see Diana Rhoads in 264 MSE for the form.
STEP #2	Thesis Proposal Committee Composition	Committee consists of at least five (5) faculty members including your major professor; at least 4 of the members must be MSP faculty. Committee members must have appointments spanning at least two different academic departments.	Obtain the form from Diana Rhoads, 264 MSE Building. Submit the thesis proposal committee member names to Diana Rhoads at the end of the first regular semester after the successful completion of your RRE
STEP #3	THESIS PROPOSAL APPROVAL FORM	Committee consists of at least five (5) faculty members including your major professor; at least 4 of the members must be MSP faculty. Committee members must have appointments spanning at least two different academic departments.	Obtain the form from Diana Rhoads, 264 MSE Building. Request a prelim warrant form a minimum of 3 weeks prior to your thesis proposal - see Diana Rhoads in 264 MSE Building for the form.
STEP #4	PhD THESIS DEFENSE	Committee consists of at least five (5) faculty members including your major professor; at least 4 of the members must be MSP faculty. Committee members must have appointments spanning at least two different academic departments.	Please request a PhD warrant a minimum of 3 weeks prior to your defense - see Diana Rhoads in 264 MSE Building for the form.

MASTER OF SCIENCE MATERIALS SCIENCE PROGRAM REQUIREMENTS
(Approved: June 2002)

Part A: Curriculum

Requirements

- A minimum of 5 classroom courses consisting of at least 14 credits. Satisfactory progress must be demonstrated, consistent with Graduate School requirements for good standing (i.e., 3.0 GPA or better). The following additional requirements and restrictions apply to these 5 courses:
 - At least 3 courses consisting of at least 8 credits must be at or above the 600 level. Students can petition for exceptions for other courses that must not be generally regarded as part of undergraduate curricula. (Examples of exceptions: NEEP 547 & 548, MSE 530, 570, & 445, ChE 540 & 544. Others possible by petition.)
 - The courses must span two or more Departments, meeting the objective of an interdisciplinary education in materials.
 - MSE 900 may not be used to satisfy any aspect of this requirement.
 - Academic advisor's signature is required to remove the registration hold for each semester's registration.
 - Two semesters of MS&E 900 (MSP seminar course). MSE 900 must be taken in the first and second semester of enrollment if it does not conflict with other requirements.
-

Relevant Information

- Consistent with Graduate School requirements, students must have an academic advisor who advises them in course selection. Typically, the research mentor(s) (or “major professor(s)”) will also serve as the academic advisor(s). The academic advisor’s signature approving the semester course plan must be on file in the MSP office in order to remove the registration hold for each semester’s registration. The MSP Director or his/her appointee will serve as academic advisor for new students who have not yet selected a research mentor.
- A petition process will be available for special exceptions
- A standing committee will be appointed and maintained by the Program Director for the purpose of evaluating petitions.

Part B: Research Requirements

Research Report and Oral Evaluation

- A written report describing the student’s research must be submitted to the student’s MS Committee for evaluation. This report is to be written by the student in consultation with his/her thesis advisor(s) in a format that is acceptable to the advisor(s) and the MS committee. Possible formats include a formal Masters Thesis, a completed publication, and a completed progress report, among others.
- The student will conduct an oral presentation summarizing the research procedures, results, related literature, and significance of the research. The MS Committee will conduct an evaluation of the abilities of the student. Discussions may be directly about the research, or may probe the student’s understanding of relevant related concepts. Based on the written report, the oral evaluation, and the

student's graduate course grades, the Committee will decide if the student is deserving of an M.S. degree.

- The student is responsible for scheduling this presentation and evaluation, confirming that all MS Committee members can attend, and reporting the date and the Committee members' names in advance to the Materials Science Program Office. The date and time of the presentation will be announced to members of the Materials Science Program. It is intended that this examination normally take place before the end of the fourth regular semester of study (not including summer sessions).
- Committee members may decline to participate in a scheduled MS presentation and evaluation if they have not received the final draft of the written report at least two weeks prior to the scheduled event or if the student's major professor(s) has not approved it.
- *MS Committee constitution:* The Committee is composed of at least three faculty members of the Materials Science Program (the Materials Science Advisory Committee or MSAC), including the student's major professor(s). The Committee must consist of members from at least two different academic departments. The student may wish to invite additional faculty with relevant expertise who are not members of the MSAC. The student must confirm that each Committee member is willing to serve and report the makeup of the Committee to the Program office by the end of the third semester of study.

INTERDISCIPLINARY DEGREE OF
Materials Science

College of Engineering

University of Wisconsin-Madison

[Home](#) : [Prospective Students](#) :

Illustrative Ph.D. Curriculum for New Students

Illustrative curriculum for 1st 2 semesters for new students

Fall Semester (first semester): 3 courses + seminar

[MS&E 448](#): Crystallography and X-Ray Diffraction

Applied mathematical analysis course (such as [CBE 660](#), [NE \(NEEP\) 547](#), [Math 703](#) or [Math 704](#), etc.)

[CBE 440](#) or [MS&E 351](#) (introductory Mat. Sci. courses for students without prior background)

[MS&E 900](#) (seminar)

Additional and/or substitute courses — for students with the necessary backgrounds: [MS&E 530](#):

Thermodynamics of Solids; [EMA 506](#): Advanced Mechanics of Materials I; [MS&E 451](#): Introduction to Ceramic Materials; [Phys 551](#): Solid State Physics, [Chem 561](#): Physical Chemistry.

Spring Semester (second semester): 3 courses + seminar

[MS&E 330](#) (Thermodynamics, for students without a Mat. Sci. background)

[MS&E 748](#), [MS&E 770](#), or [Geol 777](#) (instrumentation and materials analysis)

For general solid state physics or electronic materials: [Phys 551](#) or [CBE 544](#) or [ECE 745](#)

For mechanics: [EMA 622](#) or [EMA 700](#) or [MS&E 751](#) or [EMA 611](#) or [EMA 506](#)

For polymeric materials: [CBE 540](#) or [Chem 654](#) or [Chem 664](#)

For all students: [MS&E 900](#) (seminar)

For the second year, it is sufficient to take 4 remaining lecture courses, most or all at or above the 600 level.

Make sure that at some point during the two years you satisfy the math requirement. Recommendations include [CBE 660](#), [NE \(NEEP\) 547/](#) [NE \(NEEP\) 548](#), [Math 703](#) or [Math 704](#), [Phys 721](#). Others possible by petition.

Copyright 2009 The Board of Regents of the University of Wisconsin System

Date last modified: 28-Aug-2002 12:32:00

Date created: 28-Aug-2002

Content by: vanderby@ortho.wisc.edu

[Accessibility](#)

[Web services](#)

THE UW MATERIALS SCIENCE COMMUNITY

Being part of an interdepartmental program, you will experience both the joys and frustrations of belonging to a very diverse and widespread community. You may have to travel quite a ways between classes and your office. You may have to make quite an effort to see some people. On the other hand, a wide range of analytical equipment is available from different departments, you'll be continually exposed to new and different topics and ideas, and you should have a broad spectrum of research possibilities from which to choose.

To help keep the MSP community together, we have weekly seminars (every Thursday - see the *Timetable*, course MS&E 900, to receive credit for attending) with coffee and cookies. Anyone with a Ph.D. is welcome to give a Thursday presentation. Everyone in the MSP is encouraged to invite researchers they'd like to meet and hear speak. See Diana Rhoads for scheduling.

A student and faculty lounge is located in 177A MS&E and is open to everyone in the Materials Science Program.

Student Advisory Committee (SAC)

SAC is a committee of graduate students whose main function is to act as liaison between faculty and MSP students. The committee also exists to address any grievances or concerns brought to their attention by other students and to promote a sense of community through planned socials and study hours.

Each fall (around November), an e-mail message is sent out asking for volunteers to serve on the SAC. If necessary, the current SAC members organize an "election" to determine the committee members for the next calendar year. All MSP students who have been in the MSP for more than one year are eligible to run for office.

INTRODUCTION

This handbook was written by materials science graduate students for new students. We have experienced the difficulties involved in moving into this Program, university, and city, and we would like to make available to you some of what we have learned. We have tried to address questions you have now or will have in the near future:

- * [Getting Started \(page 3\)](#): When should I get to Madison?
- * [Finding an Advisor and Research Group \(page 4\)](#): When and how do I find an advisor?
- * [Financial Assistance \(page 5\)](#): How does research funding work?
- * [Course Registration \(page 7\)](#): What classes should I take?
- * [Housing \(page 9\)](#): Where can I go to find out about somewhere to live?
- * [Transportation \(page 11\)](#): To have, or not to have, a car?
- * [Etc. \(page 13\)](#): What about photo ID card validation, health care, and day care?

GETTING STARTED

The most immediate question you may have is your arrival date in Madison. If you are entering in the fall, you should arrive at least in time for the Materials Science Program (MSP) orientation session. If possible, plan a house-hunting expedition during the spring or early summer. Be sure to allow plenty of time (about a week). There is a greater selection of apartments and houses if you arrive before August 15th, but housing is not too difficult to find. Your research advisor, if you already have one, might want you to come earlier so you can begin a research project before classes start. You might inquire about this possibility because the summers in Madison are wonderful. If you are entering in the winter, you should arrive at least a week (but probably more) before the beginning of the spring semester to register, find housing, and get settled.

Your primary concerns after you arrive will be finding a place to live, deciding what classes to take in your first semester, and registering. Things like planning your schedule for the next few years can wait, at least for a little while.

An interesting book to read when you first start grad school is *A Ph.D. is Not Enough: A Guide to Survival in Science* by Peter J. Feibelman. It talks about grad school in general and beginning a career in science.

Desks and office space

The "powers that be" (Diana Rhoads, #264 MS&E Bldg., rhoads@engr.wisc.edu) will find desks for the new students who are as yet **unattached** to a professor. It may be necessary to share a desk at first. When you get an advisor, he/she will be responsible for providing office space. Office space is tough to come by (lots of political activity is involved), so the quality/privacy/noise will vary, but you can count on having somewhere to hang your hat. Usually, it amounts to a desk, one half of a 5-drawer file cabinet, one half of a 5-shelf bookcase, and an office computer. You also get a building key, office key, and building passes which are necessary for access at night and on weekends when the buildings are locked. You can pick up keys to the Engineering Research Building (ERB) from Mitch (ERB mailroom on 1st floor); you will need \$5.00 for the key deposit (checks are accepted). Chris Kailhofer is the man to talk to about keys and access in the Materials Science & Engineering building (262-8175, room 201C). You may also need to gain swipe access to the Materials Science & Engineering building. Talk to Chris Kailhofer to get on the swipe access list.

Mailing Address

There are mailboxes on the 1st floor of ERB and the 2nd floor of the Materials Science & Engineering building which students with common last initials share. They serve the function of a WORK mailbox well enough. Which one you use will depend on where your office is located, and personal preference. Packages and other mail can be sent to these addresses, but the mailroom staff accepts to responsibility for lost packages after receiving them from the mail carrier. These addresses are the following:

(Your name)
ERB (office #)
1500 Engineering Drive
Madison, WI 53706

(Your name)
Materials Science & Engineering Bldg.
1509 University Ave.
Madison, WI 53706

Program vs. Department

One source of confusion for new students has been the fact that the Metallurgical and Mineral Engineering department has changed its name to the Materials Science and Engineering department. The Materials Science

Program, however, is a separate entity from the Materials Science and Engineering **Department**. We are an interdisciplinary, interdepartmental graduate program with students selecting research advisors from the advisory committee members, who may be from the Materials Science & Engineering Department, Physics, Chemistry, Electrical and Computer Engineering, Chemical Engineering, Civil Engineering, Mechanical Engineering, Engineering Mechanics, Geology, Nuclear Engineering, Pharmacy, Forest Products, etc..

When you first arrive on the UW-Madison campus, the best thing to do is to go to MS&E 264 (1509 University Ave.), and introduce yourself to Diana Rhoads, the Program administrator. She will help you get started. Knowing someone, getting a desk, and finding your mailbox may help dispel the initial disorientation. Also, if you meet some people who have been here for awhile, they can probably steer you in the proper direction to drink beer, join the sailing club, try out for musical groups, or learn what is available in Madison.

Enjoy Madison! It has a lot to offer.

FINDING AN ADVISOR AND RESEARCH GROUP

Many entering MSP students will have found an advisor by the time they have arrived in Madison. However, the following section applies if you don't have an advisor yet or are thinking about switching advisors. The impression sometimes given is that you will have the opportunity to work with a number of groups in your first year, but what usually happens is that you will interview with several groups until one is found. Keep in mind that you probably will be taking a heavy course load in your first two semesters at Madison. It is hard to find the time to tinker in several labs. Besides, there is a limit to the amount of time that professors are willing to spend with a student without some kind of a commitment. However, much can be learned about a professor's research talking with the professor, *and especially their students*, and by reading publications from the group. You should talk to professors in as many different areas of research as possible, even if you're pretty sure what you want to do. This is a great time to find out what is going on in the MSP. You should start looking for an advisor as soon as possible.

The best way to start looking for a research group is by talking to people: professors, their graduate students, and other graduate students. People are usually more than willing to talk to you about this subject (or any subject). Most groups hold weekly group meetings. Attending one can give you an idea of the research underway and of the group dynamics. Some questions to address are:

- * How long does it take to graduate from Professor X's group?
- * What degree do most people leave with?
- * How much time does he/she spend with students and in the lab?
- * Does he/she assign projects or expect the student to come up with his/her own?
- * Does he/she have enough funding to take me on now?
- * Does he/she have enough funding to enable me to finish my degree?
- * Is he/she likely to be around long enough for me to finish my degree?

You should also consider whether or not you can get along with this person and the group as a whole for the next four or five years. Personality conflicts are not unheard of and can result in lost time.

It is a good idea to begin working in a group as soon as you can. Professors often hire incoming students in the summer to allow them to see how they fit into the group and to see if they are interested in the research. Academic pressures are usually less severe at the beginning of the semester than later on. Most of all, if you find that you do not enjoy your research project, group or advisor during your first year, start looking around for another group. Changing advisors is not uncommon, and it is much easier after one year than after four. Try to make a wise and informed choice, but don't become obsessed with making the perfect choice.

FINANCIAL ASSISTANCE

Graduate students in Materials Science at UW-Madison typically support themselves by one of the following:

- * Research Assistantship (RA)
- * Teaching Assistantship (TA)
- * Fellowship or Grant

Most new students in the Program have RAs for the first year. The availability of TA positions varies widely; for example, there are many TAs in the Chemistry department and few in Materials Science & Engineering Department. A fellowship or grant is usually the most desirable since it often has the least number of strings attached (once you've obtained the grant) and can provide the most money.

Most students are paid on a half time basis, either a half time RA, half time TA, or some equivalent combination of the two (1/6 RA + 1/3 TA etc.). However, a full-time student may hold up to a 3/4 time appointment with correspondingly higher pay (this is not common).

Entering Materials Science students who are supported by the Program are paid on an annual basis, 12 paychecks a year, on the first day of each month. Payroll difficulties are most likely to occur when the student begins to work for a professor who then puts the student on his/her payroll. That payroll may be administered differently than MSP funding. Be sure to discuss the matter of payment with your professor and his/her department secretary/payroll person, so that you understand when your pay from the MSP ends and your pay from the professor's fund begins. It is your responsibility to notify the MSP when you begin working for a professor! It is the intention of the MSP that there be no interruption in your pay. If your pay is not deposited in your bank by the first of the month (go to the Peterson building to get automatic deposit service initiated), or your paycheck is not available for pick-up on the first, see the Program administrator **IMMEDIATELY!** The longer you wait, the more difficult it is to straighten out and, unfortunately, it could take some time. Be forewarned.

RA Funding

Generally, students pursue RA (or fellowship) funding through their entire graduate career. RAs are usually obtained directly through your major professor, although it may be possible to work with two professors and get paid as a RA by the minor professor; there are many possibilities. A RA is probably the most direct way to get your degree, since working as a TA does not leave as much time for actively pursuing a research program. However, you may want to consider what your personal and career goals are before you bypass a teaching assistantship.

In 2010-2011, the yearly salary for a 50% RA in Materials will be \$20,400. Tuition (both in- and out-of-state) is waived if the student has an appointment of 1/3 time or greater. An "Authorization for Remission of Fees/Tuition" form should be filled out in advance by the MSP and should be at the Bursar's office when you register. If by some chance the form is not there, go to the MSP office (Rm. 264 MS&E Building) to get this taken care of. If you are an RA you must register for at least 8 credits per semester and no more than 12. During the summer you must register for at least 2 credits.

TA Funding

TAs are often used to fall back on if your professor is short of grant money. Teaching can be a lot of work (especially since you will be doing research at the same time), but it can also be a valuable experience. Even if RA funding is available, you might wish to teach for one or two semesters.

Since the Materials Science Program is not a department, it has no teaching assistantships of its own. Students must inquire at individual departments for possible positions. Many of the TAs in Physics, Chemistry, and Engineering involve labs that can be very time consuming. To apply for a TA position, first ask your major professor if there are positions available in his/her department. If not, go to one or more of the departmental offices and fill out an application. It is best to apply early. TA positions last for nine, eleven, or twelve months. **Be sure you know when your support ends, or you may be in for a big surprise!**

One word of caution about RAs and TAs: there are several different pay schedules at UW-Madison. Some people get 11 monthly paychecks per year while others get 12. Some appointments, such as TAs (and some RAs, depending on the department), are paid on an academic year basis and are thus paid over 9 months or for the duration of the appointment (one semester). The net amount paid on a yearly basis is about the same, regardless of the number of paychecks received; it's just distributed differently. Find out which schedule you are on from your professor so you don't get a big surprise at the beginning of some month. The payless months are between semesters, usually in the summer.

There is a very politically active union called the Teaching Assistant's Association (TAA), which recently negotiated a new contract with the university. The contract is on their web page, at <http://www.taa-madison.org/> and has a lot of interesting information about rules and guidelines for TA's. The TAA is involved in improving working conditions for **all** graduate students at the university, so if you believe something should change here in the UW, getting involved in the TAA would be a good way to do it (for example, they're responsible for our tuition waiver).

Fellowship Funding

Fellowships are often the best deal. They usually pay more than a RA, and they look great on your resume. When you support yourself through fellowships, you have more freedom to choose a research group and a project within that group (unless your fellowship has restrictions).

If you want to apply for a fellowship, there are several ways to get more information and application forms:

- * Ask your major professor if he or she knows of any fellowships for which you might be eligible.
- * Check the MSP bulletin boards for announcements (MS&E 264).
- * Inquire at the appropriate departmental offices (Physics, Chemistry, Electrical Engineering, Nuclear Engineering, etc.).
- * Graduate School Fellowships Office, 217 Bascom Hall, 265-5522
<http://www.grad.wisc.edu/education/funding/univfellowships.html>
- * Office of Student Financial Services, 333 East Campus Mall #9701, 262-3060
<http://www.finaid.wisc.edu/>

There are several fellowships for which you can apply only during your first year or so of graduate study: National Science Foundation (NSF), Office of Naval Research (ONR), Department of Defense (DOD), and John and Fannie Hertz fellowships are examples. Apply for these as early as possible. There are many fellowships available and you should apply for as many as you can, as soon as you can. If you don't apply, no one is going to give you a fellowship. It may be best to try and apply for fellowships over the summer as the first semester at Madison can be quite busy and little time might exist to fill out lengthy applications.

Tuition Remission and Payroll Deduction

If you have at least a 33% research or teaching assistantship, you are entitled to have tuition (both in- and out-of-state) waived. However, segregated fees (about \$1146 per year) are not covered by this remission. Some fellowships will cover the cost of segregated fees. Contact your fellowship administrator to verify. The segregated fees will continue to be charged to the student.

New graduate students starting September 1 should receive their first paycheck on October 1. From then on, payday is the first of each month for the previous month.

Summer Session

You must be registered as a full time student (i.e. registered for at least 8 graduate level credits) during fall and spring semesters to qualify for a graduate assistantship. Most students in the MSP do not take classes in the summer, but register for the minimum number of credits allowed to qualify as a full time student (2 credits) as research credit under their major professor. In effect, you have to pay summer fees in order to get paid or even to be allowed to do research work on campus. Summer fees must be paid before the summer session begins, and there is no payroll deduction plan for the summer. Segregated fees and other costs are directly related to the number of credits one takes during a semester. For this reason, most MSP graduate students try to keep only the minimal amount of credits required to be a full time student for a given semester.

If you are on an assistantship during the summer, you are not allowed to work full-time elsewhere. There are programs with national labs and corporations that allow students to work for the summer and earn money, rather than being on salary here.

Taxes

Since we're grad students and not accountants, our advice on taxes is to ask the "people who know" at the Employee Compensation and Benefits Services, 21 N. Park St., 262-5650. State and federal taxes are withheld from your monthly stipend, which amounts to almost 20% of your paycheck, but this may depend on your fellowship status.

This web address – (<http://www.bussvc.wisc.edu/bursar/tra97.html>) – includes links to all the available IRS documents and tax forms needed to file for the Hope Scholarship and Lifetime Learning tax credits and the student loan interest deduction. This is the best location for students and their families to go to get complete information about these programs.

COURSE REGISTRATION

Students register on the computer by entering course codes. About a month and a half before the semester begins, all students receive in the mail a personal identification number (PIN) for gaining access to the computer. Under separate cover, new students receive the *Timetable*, which lists the schedule of courses offered for the semester. Continuing students can access the *Timetables* online http://registrar.wisc.edu/fall_pdf_timetable.htm. Inside the *Timetable* are complete registration instructions. If you do not receive your registration materials and tuition bill, it could be that your file at the graduate school is not yet complete. You will need to find out from them what is missing to clear the matter up.

Course Selection

Students on assistantships must enroll for 8 to 12 semester credits. We recommend that you enroll for 12 credits if you are not a TA. Graduate classes are usually 3 credits each, so that means four classes, or three classes and three credits of thesis research (MS&E 790, 890, or 990, depending on your status). That way, if you want to drop one of your classes, you will remain above the minimum credits needed for grad students (8 credits).

Students on fellowships or those without any financial assistance are required to register for 8 credits to be considered full-time (the registrar's office phone number is 262-0920).

Most of us come from different backgrounds and have different deficiencies (from the Program's point of view). For advice, your academic advisor (or Prof. Donald Stone if you don't have an advisor) is a good place to start, but keep in mind that professors are not always up-to-date on important details of the system. Students who have taken a particular course recently are probably the best information source. They can tell you about the professor's teaching style and expectations, the course content and difficulty, and more. The course instructor can usually tell you what book he/she is using, the general course content, the background required, and the intended level of difficulty. You can also talk to other professors in the MSP or ask for information at departmental offices.

MS & PhD requirements for the Materials Science Program may be found at: <http://www.engr.wisc.edu/interd/msp/prospective/degrees.html>. For an illustrative curriculum for 1st 2 semesters for new students please go to: http://www.engr.wisc.edu/interd/msp/prospective/illus_curric.html.

The MSP does not have a core curriculum. Nonetheless, there are several courses that are highly recommended. These are:

<u>COURSE</u>	<u>SEMESTER</u>	<u>TITLE</u>
MS&E 448	Fall	Crystallography and X-Ray Diffraction
MS&E 451	Fall	Introduction to Ceramic Materials
MS&E 530	Fall	Thermodynamics of Solids
MS&E 351	Fall	Structure and Property Relations in Solids (optional)
MS&E 352	Spring	Transformations in Solids
MS&E 441	Spring	Deformation of Solids
MS&E 748	Spring	Structural Analysis of Materials (TEM)
PHYS 551	Fall, Spring	Solid State Physics (take either in the spring or your second fall semester and find out whether a theorist (math-oriented) or experimentalist (phenomenological) is teaching the class)

Warnings

If you are not eligible to enroll to a certain class (especially for MS&E Research & Thesis credits), don't panic! You will probably need to talk to Diana Rhoads for "electronic permission" to enroll. This just means that your student ID number needs to be in their database to clear the system.

Some classes are offered either exclusively in the fall or spring. We have tried to list the appropriate semester in the list above, but you should consult the *Timetable* which is available on the web at <http://registrar.wisc.edu/timetable/>.

If you are completely new to materials science, either ChemE 440 (Chemical Engineering Materials) or MS&E 350 (Intro. to Materials Science) would be helpful. However, you can usually pick up everything from the introductory courses with a little extra work during the advanced courses, rather than taking both courses. If you are already familiar with thermodynamics, there is probably no need to take Chem 561 which is really a prerequisite for MS&E 530.

Graduate students cannot receive credit for courses numbered under the 300 level. This means that if you sign up for a course of number < 300 for fun, you still need at least 8 credits worth of courses above the 300 level to be a full-time graduate student and gain full residence credit. You must have the equivalent of 6 semesters in residence to gain dissertator status. Since the tuition situation just changed (see ***Tuition Remission and Payroll Deduction***), it is currently not clear to us if you will be charged for exceeding 12 credits.

The course number (x) reflects its level of difficulty:

* junior level: 300<x<400

- * senior level: $400 < x < 500$
- * graduate level: $500 < x < 700$
- * advanced grad/professional level: $x > 700$

Again, be sure to ask other Materials Science students for their recommendations on teachers as well as classes.

HOUSING

Short-term housing

When you arrive in Madison to look for housing you can stay in short term University housing (hotel-like accommodations; no kitchen available) or at another graduate student's house or apartment. Some of the places on campus that you can stay at are:

- * Union South is normally a place you could get a room, but the new Union South is under construction and therefore not available.
- * UW Short Course Dorms, 262-2270. These are dorm rooms for 1-4 people that are open to those associated with the University, new students included; reservations are recommended as there is very limited space from November 1st to April 1st. Rates range from \$15-35/day. Parking is additional.

Off-campus housing

There are several areas that are acceptable for graduate students. Some of the more popular ones are Vilas Park area, Bassett neighborhood (between West Washington and Monona Bay), north side of Lake Monona (near Wilson Street or Williamson Street), and University Ave. (west of Breese Terrace). Most graduate students cannot afford to live by themselves so they share houses. According to the Campus Assistance Center webpage (<http://housing.civc.wisc.edu/faqs.asp#q2>) typical rents for near campus apartments are shown in the table below:

2002-03 MONTHLY RENT PRICE RANGE FOR APARTMENTS & HOUSES						
	Apartments			Houses		
Size	Range	Average	Per Person with own Bedroom	Range	Average	Per Person with own Bedroom
Efficiency	\$370-590	\$580				
1 Bedroom	\$580-1055	\$730				
2-Bedroom	\$650-1675	\$1130	\$325-837.50			
3-Bedroom	\$900-2195	\$1520	\$300-732	\$945-1575	\$1251	\$315-525
4 Bedroom	\$1320-2955	\$2000	\$330-738.75	\$1250-2200	\$1658	\$312.50-550
5 Bedroom				\$1600-2550	\$1968	\$320-510

On top of this, unless your rent includes utilities, you can expect to pay an average of \$25-\$50 a month for utilities (higher in winter than in summer) and an initial security deposit of one month's rent. Prices can drop

dramatically for apartments further from campus and bus lines, but transportation and parking can then become a problem.

Most leases around campus run from August 15 to August 14, so if you arrive in Madison before the 15th your selection should be better. Apartments near or further west of Midvale Road typically lease on a different timetable. Be sure to confirm lease dates with your prospective landlord. If you want to come earlier, you should know that summer sublets are generally 25% to 60% less than usual rents, so you can live very cheaply during your first summer here.

For more information about housing, go to the **Campus Assistance Center** webpage (<http://housing.civc.wisc.edu/>) or call (608) 263-2400, or stop by (716 Langdon St.) to look at the current listings for all types of housing arrangements. You may obtain a brochure called "The Most Frequently Asked Questions About Off-Campus Housing." online at: <http://housing.civc.wisc.edu/faqs.asp#b3>. The Campus Assistant Center's regular hours are 8-5 M-F, 11-2:30 Saturday and Sunday (reduced during holidays and breaks). You can also look at notices on billboards in Memorial Union, Union South, the libraries, or in many other campus buildings (such as Humanities). Newspapers such as *Isthmus*, the *Wisconsin State Journal*, *Capitol Times*, and the *Badger Herald* also have housing listings. Several times a year, the *Badger Herald* (the student newspaper) has special housing issues in which it lists hundreds of apartments, rooms to rent, etc. These are usually in the beginning of the fall semester and the end of the spring semester. Another possibility is to use a rental agent or rental search agency (such as "Rent Search"), but they charge you for their help, and most people will do fine without them. Students have also been very successful finding places through Madison's craigslist site.

Housing prices can vary widely and are not always proportional to quality. There is plenty of housing available so be persistent and look until you find something you like and can afford. Before signing a lease with anyone, you should call one or more of the agencies below and ask about how many and what types of complaints have been made against the building owner and/or management company. It is very important to do so; the list can be shockingly long for certain notorious owners!

Check parking availability or access to campus bus lines. More details are given in the transportation section starting on page 13.

Note that landlords in the city of Madison are not allowed to charge more than one month's rent for a security deposit (unless the tenant has a pet or waterbed, in which case they can charge whatever they like). Landlords are also required to pay you 5% annual interest on your security deposit.

If you have any questions about rents, leases, or tenant rights, brochures may be obtained from Campus Assistance Center, or call one or more of the following:

- * Tenant Resource Center 257-0006

Living Cooperatives

Madison has many cooperatives, concentrated mostly in the downtown area. These are houses that are owned by the individuals living in them. Each resident is a member of the cooperative's corporation. All residents participate in running the house and doing particular jobs (such as cooking on Tuesday night or required cleaning of the living room or bathroom). The residents also set the rent each year, and it is usually set to meet the mortgage payment and utilities. Also, money is set aside in a long-term maintenance fund for the house. This means the rent is usually below the average for a bedroom in a larger house. Cooperatives vary in size from about 5 to nearly 40 people. There is usually some sort of screening of applicants by a membership committee.

On-campus housing

University Housing (262-2522, <http://www.housing.wisc.edu/>) is very limited and there is usually a long wait for an apartment (often 3 to 12 months or longer). Priority is given to Wisconsin residents applying before March 15, married students, and veterans. The university operates approximately 1091 one, two, and three bedroom unfurnished and furnished apartments for graduate students, either single graduate or graduates with families. Rent is quite reasonable; for example, at Eagle Heights the 2009-2010 rent is \$655 & up per month for a 1-bedroom,

\$730 & up per month for a 2-bedroom, \$835 and up per month for a 3-bedroom (all include heat & water, washer & dryer, and all apartments are connected to ResNet, which provides ultra highspeed connection to campus computing resources, including the internet and e-mail at no additional charge). The waiting period for an apartment is about one year. You should apply long before coming to campus. In our experience, the waiting time quoted is a worst case scenario; it is not usually that long, and only rarely would the wait be longer. In addition, there is a campus bus pick up in Eagle Heights every 7 minutes during the semester to bring you to campus.

Utility Service Information – Where to go to hook up Gas & Electric Service and Cable Service:

Gas and Electric Service: MG&E (Madison Gas and Electric): Moving/Starting or Stopping Service/Billing Questions/Account Information/Other - call 608-252-7222. Their website is www.mge.com.

Cable Service: #1 Charter Communications – 1-888-438-2427. #2 Sky Cable TV – 608-271-6999. Their website is www.skycabletv.com.

Telephone Service: #1 AT&T. Their website is www.att.com. **#2 TDS Metrocom – new sales 1-866-278-2472.** Their website is <http://www.tdstelecom.com/>

Internet Service: #1 Charter Communications #2 Madcity Broadband (city wide wireless: <http://www.madcitybroadband.com/>) #3 AT&T DSL

TRANSPORTATION

There are four modes of transportation in Madison: walking, bicycling, driving, and taking the bus.

Biking

By far the most reliable, probably the fastest, and definitely the cheapest modes are walking and bicycling. Bring your bicycle! (Unfortunately, you also need to bring a very good lock, and a helmet is recommended.) You can get around most places in Madison for close to nine months during the year (from January to March, there is usually snow and ice on the roads), although some diehards do use their bicycles all year round (and survive!). Madison is one of the best cities in the country for bicycling. There are a fair number of bicycle lanes, and generally people respect the rights of cyclists here. There are bicycle racks all over campus and in the downtown area too, so you can lock your bike. Madison is fairly small. From the west end of campus to the east end of downtown is 4 miles, so on a bicycle you can get just about anywhere in Madison in 15-20 minutes. A bicycle is subject to the same traffic laws as cars, and there are bicycle police to enforce them. Citations (\$38.50-\$100) are given for violations such as riding the wrong way in the bike lane, not stopping for a stop sign or light, or riding at night without a light (yes lights are required by law and are a great idea for safety). Bicycle licenses are also required, but if you are caught without one, the fine is generally forgiven if you buy a license in the next few days. You can get one online at <http://www.cityofmadison.com/trafficEngineering/bicyclingRegistration.cfm>. Madison bike trails are now located online at Google maps.

Parking

You would think that since the Midwest has so much open space, parking would not be a problem. Not so in Madison! Madison and the University are squeezed between lakes Mendota, Monona, and Wingra, so available space for parking is both difficult to find and expensive.

Most of the very limited parking around campus is by permit in campus parking lots, free two-hour parking on nearby roads, or parking meters. There are some private parking lots, but they charge from \$1.50 per day and up. Eight-hour meter parking is limited and costs 75 cents per hour. The University penalties for parking illegally (expired meter or no permit) are substantial: \$10-25+ per offense. City offenses are the same or higher. Parking in handicap spaces and some other restricted spots is a towable offense. There is free all-day parking on some side streets, starting around six blocks south of campus. But as time goes on, these areas are being re-zoned and either yellow stripes are painted along the curbs (No Parking), or 2-hour parking signs put up and enforced. There are some streets where parking is for residents only (by permit).

Parking can also be a problem if you live near campus or the Capitol. The landlords usually charge \$25-40/month extra for off-street parking (up to \$65 or \$80/month around the Capitol). If you do live on a street where parking is limited, you can apply for a residential parking permit at the Madison Parking Division, 215 Martin Luther King, Jr. Blvd., between the hours of 7:30 a.m. and 4:15 p.m., Monday through Friday (266-4761); the fee is \$21.00 for a year. These permits allow you to ignore the two hour parking signs within a certain section of downtown but you can only stay in the same spot for 48 hours with a resident permit. Be aware that for every parking spot in the downtown area, about 4 parking permits are sold. Also, from November 15 through March 15, alternate-side street parking goes into effect. This means that on even-numbered days, your car must be parked on the side of the street with even house numbers between 1 a.m. and 7 a.m. Tickets can range from \$10 to \$25 during snow emergencies. So, as winter approaches, listen for the latest information about alternate-side street parking or call the Snow Emergency Hotline at 261-9111. You can also register for e-mail and text alerts for snow emergencies.

Busing

The ASM Bus Pass Program provides access to inexpensive, accessible mass transportation to students of the University of Wisconsin-Madison. Funded by students for students, this program entitles almost all students of the University to a pass good for unlimited rides on the local bus and paratransit system, Madison Metro. For further information, please visit their web site at: <http://asm.wisc.edu/bus/buspass.htm>. The Madison Metro bus system can be quite good depending on the route. All you need is a valid student ID and be registered for classes to pick up your bus pass at either Union South when construction is done or Memorial Union. For help identifying the best bus to take to get from one place to another, call Madison Metro Information at (608) 266-4466 or look up the new route maps and schedules on the Metro website: <http://www.ci.madison.wi.us/metro/>

You can get most places on the bus system but the questions are "When can you get there?" and "How long will it take?" Depending on the particular route, buses run until about midnight, but some run only until 10 p.m. or earlier. Some routes do not run on weekends. The time between buses varies from 10 minutes to an hour. A thirty-minute wait for the bus is not too bad in the spring, summer or fall, but it can be a very chilling experience in February.

One of the prime considerations for housing will probably be "Is the apartment or house near a bus line?" If not, when your car doesn't start in February and the roads are too icy for bicycling, you may be in for a long cold walk to campus! You can get a free Metro ride guide if you go to the Visitor Information Place next to Memorial Union (800 Langdon), the UW Transportation office (124 WARF), or any city library.

In addition to fee based Madison Metro routes, there is also a free to anyone campus circular and saferide bus routes. These are any bus routes in the 80's. They typically run more frequent than other routes and stick to routes near campus. These routes are free to anyone, just hop on.

ETC.

Photo ID Card Validation

At 4316 Memorial Union the week before classes start, you must have a photo ID card made and, after you are registered and your fees are paid, it is validated for the semester.

A note to anyone who wants to get season tickets for hockey or football: you must have finished the entire registration process and have both your validated ID and the "fees paid" part of your registration form with you to get tickets. These ticket lines are the worst of the whole process, and tickets to the sections where you can actually watch the game fill up quickly. We suggest that people interested in sports tickets register as soon as possible.

Health Care

Use of the University Health Service (2655600) for minor health needs is paid through tuition. It is located at 333 East Campus Mall. In addition, for graduate students with at least a 1/3 time appointment, the University will cover some of the cost of any of the 5 or 6 approved health care plans. Single and family plans are available. Booklets exist that describe all the benefits of each plan. Some give free limited dental care, others don't cover it at all. Some plans allow you to choose any physician, others have a set staff that you can choose from (i.e. an HMO). This extensive health care is probably the best benefit that UW gives its grad students. Choose one of these plans when you get here. You may want to ask the advice of other graduate students before you choose a plan. Opinions on the various plans vary quite a bit from person to person.

You may change your insurance without penalty once a year during the month of October, and the change will be effective January 1st of the following year. A "Dual-Choice Enrollment" book will come in the mail. The book outlines the coverage offered by and prices for each of the available health care plans. You can switch plans or do nothing and stay with your current plan. It is important that you review your health care policy each year because prices can change annually. The plan that was free one year may charge a "healthy" premium the next, and you will have to pay it if you do not change plans in October. The new prices take effect on January 1st.

When does your insurance start? If you fill out the forms and return them to your payroll and benefits office before September 1, and your appointment starts September 1, your insurance coverage is effective on September 1. However if you do not complete your forms until after school starts, but within 30 days of your start date, you will not be covered until the 1st of the following month.

Daycare

Day care is widely available in Madison, ranging from large institutional day care centers to a few children in a day care provider's home. There are also a large number of pre-school centers for 3-5 year olds. Hourly rates average near \$2.50 and many providers have age and other restrictions. The Community Coordinated Child Care (271-9181) is definitely the first place to start your childcare search. It provides referrals in your area of family day care providers and child care centers. Also, the University publishes an excellent brochure entitled "Child Care on Campus" that lists detailed information about its six campus childcare centers with general tips and checklists for parents regarding the childcare search. More information can be obtained from the Division of Student Life, 75 Bascom Hall, 263-5700.

The tables below includes some introductory information about some well-reputed day care providers:

NAME	ADDRESS PHONE	AGE	TUITION	OPTIONS
First United Methodist Preschool/Kindergarten	203 Wisconsin Ave. 257-1772	2-6 years 9 in summer	Sliding scale, accepts tuition assistance	Full/half day
Red Caboose	654 Williamson 256-1566 (Branch sites at Lapham Elem. and Marquette Elem.)	11 months-6 years	Sliding scale, provides and accepts tuition assistance	Full/part/drop- in
University Avenue Day Care	1609 University Av. 233-5371	2.9-8 years 10 in summer	Fixed, accepts tuition assistance	Full/part Time

UNIVERSITY OF WISCONSIN CHILDCARE CENTERS

Bernie's Place	206 Bernard Court 263-1725	2.6-6.11 years	Fixed, accepts tuition assistance, student discount	Full/part Time
Eagle's Wing	Eagle Heights 265-3332	2-6 years 6-12 in summer	Fixed, accepts tuition assistance, resident discount	Full/half Day, part, drop- in
University Houses Nursery School	University Houses 238-3955	2.6-6 years	Fixed, accepts tuition assistance, member discount	Part day/ Extended day
University Preschool Laboratory Programs	1440 Linden Drive 263-4579 1127 University Ave 265-4782	2-6 years 2-8 in summer 2-6 years	Fixed, accepts tuition assistance	Full/half Day Flexible
Waisman Early Childhood Program	1500 Highland Ave. 263-5760	Birth-6 years	Varies with sessions, accepts tuition assistance	Full/part time

In addition, Kidstime program is offered through the Campus Women's Center (710 University Ave. Suite 202). It provides volunteer childcare for UW student families and offers a minimum of three hours/week of free care. The Center finds volunteers and contacts the family; however, the family and volunteer discuss the appropriate arrangements. After School Day Care (233-9782) provides after school programs and summer day camps. Big Brothers & Big Sisters (249-7328) provides volunteers to serve as mentors and companions to children ages 6-14 who have single parents.

Child Care Tuition Assistance Program (CCTAP) assists student-parents who demonstrate financial need with childcare expenses. Families may receive up to \$900 during the academic year and \$200 for summer school plus \$100 for more than one child in the family. For more information, call 262-3060. Other sources of child-care funding assistance are as follows:

- * City of Madison Day Care Program; 266-6520
- * Dane County Human Services Department; 242-7400; ask for Child Care Unit
- * East YMCA Scholarships; 221-1571
- * West YMCA Scholarships; 276-6606
- * Family Support and Resource Center; 246-2533